

Kennecott
Utah Copper
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Cindy S. Emmons
Director, Environmental Affairs

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DOGMI
MINERALS PROGRAM
FILE COPY

Kennecott

July 26, 1991

Mr. Lowell Braxton
State of Utah
Division of Oil, Gas and Mining
355 W. North Temple
3 Triad Center
Salt Lake City, Utah 84180-1203

RECEIVED

AUG 05 1991

DIVISION OF
OIL GAS & MINING

Subject: Tailings Pond Stability

Dear Mr. Braxton:

I have recently received a request from your staff for information concerning the tailings pond stability. As you are aware, structural consideration for impoundments are under the jurisdiction of the State Engineer's Office, and we work very closely with the State Engineer's Office concerning the tailings impoundment. The Utah State Engineer has been inspecting the impoundment since 1984.

Kennecott maintains constant communication with the State Engineer's office with respect to the tailings impoundment. Annual inspection of the facilities are conducted. Additionally, Kennecott has recently undertaken voluntary actions to enhance the tailings pond configuration; the State Engineer has commended KUC for those actions. Those activities include:

1. Addition of siphons to the decant pond to enhance the length of the beach.
2. Reduction of water leakage from old wood stave lines.
3. Installation of accelerometers as part of a seismic monitoring network.
4. Piezometers have been installed around the entire peripheral of the tailings impoundment, and they are used to monitor water levels on a monthly basis. Data from the past year shows a lowering of the phreatic surface. This clearly indicates a stable trend.

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5. Horizontal drains have been drilled in the southeast embankment to dewater the tails and lower the phreatic surface.
6. Vertical drains have also been placed to enhance the operation of the horizontal drains.
7. Installation of settlement monuments which are measured quarterly.

You have asked for a comment on the step-in dike as it relates to the stability of the impoundment. We would like to point out that the tailings impoundment is generally pyramidal in profile. This can easily be seen at any location around the perimeter of the tailings impoundment. During normal operation, the impounding structure must be moved in to allow a stable configuration of the impounded tailings. The step-in dike is another iteration of dike raising for the existing tailings impoundment. As always, stability is taken into account in the design of the dike raises, and the step-in dike, as configured, assures a stable operation.

Attached for your information are graphs of the monthly measurements of the piezometers in the tailings impoundment. As you can see, the trends show continued, and in some areas, increasing stability of the impoundment.

I hope this alleviates any concern that you or your staff may have had about tailings stability.

Sincerely,

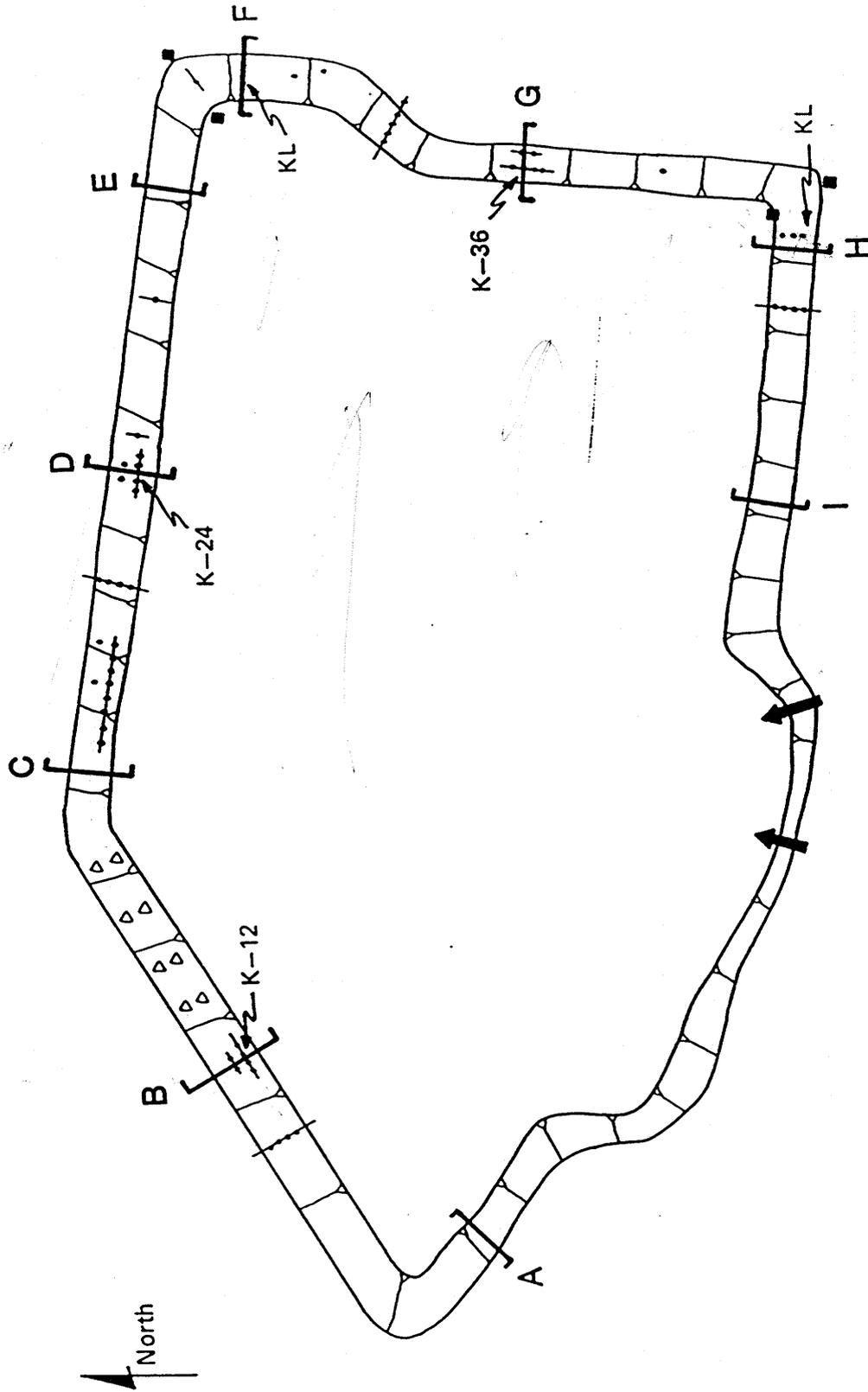


Cindy S. Emmons
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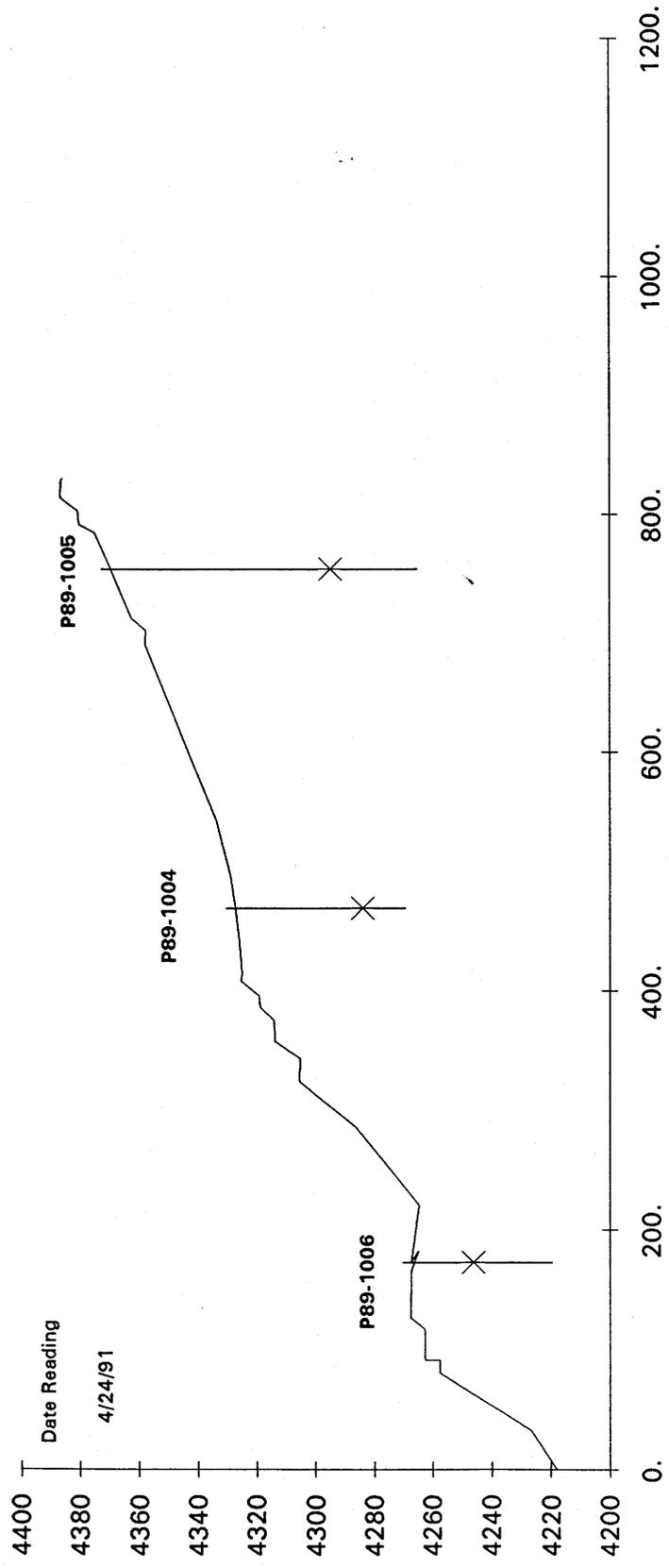
Enclosure

LOCATIONS OF PIEZOMETER STATIONS

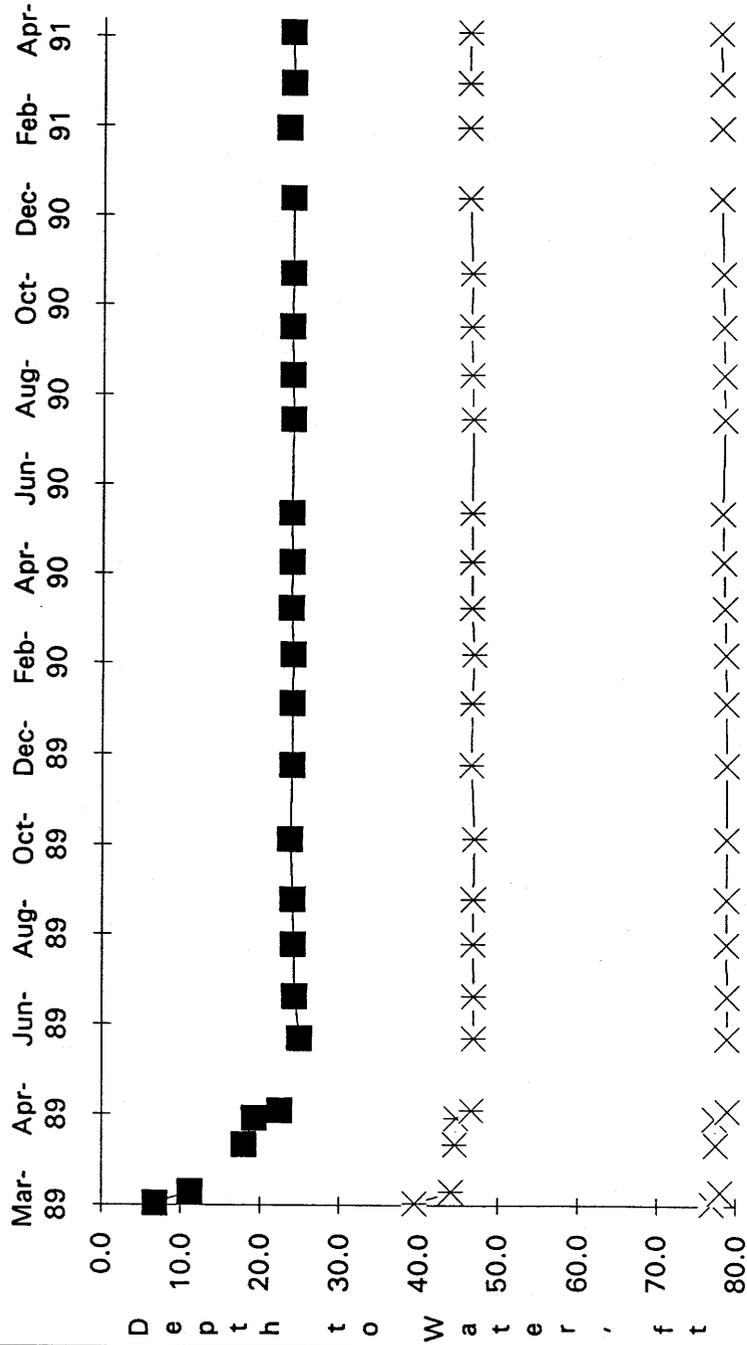


Not to Scale
(Locations Approximate)

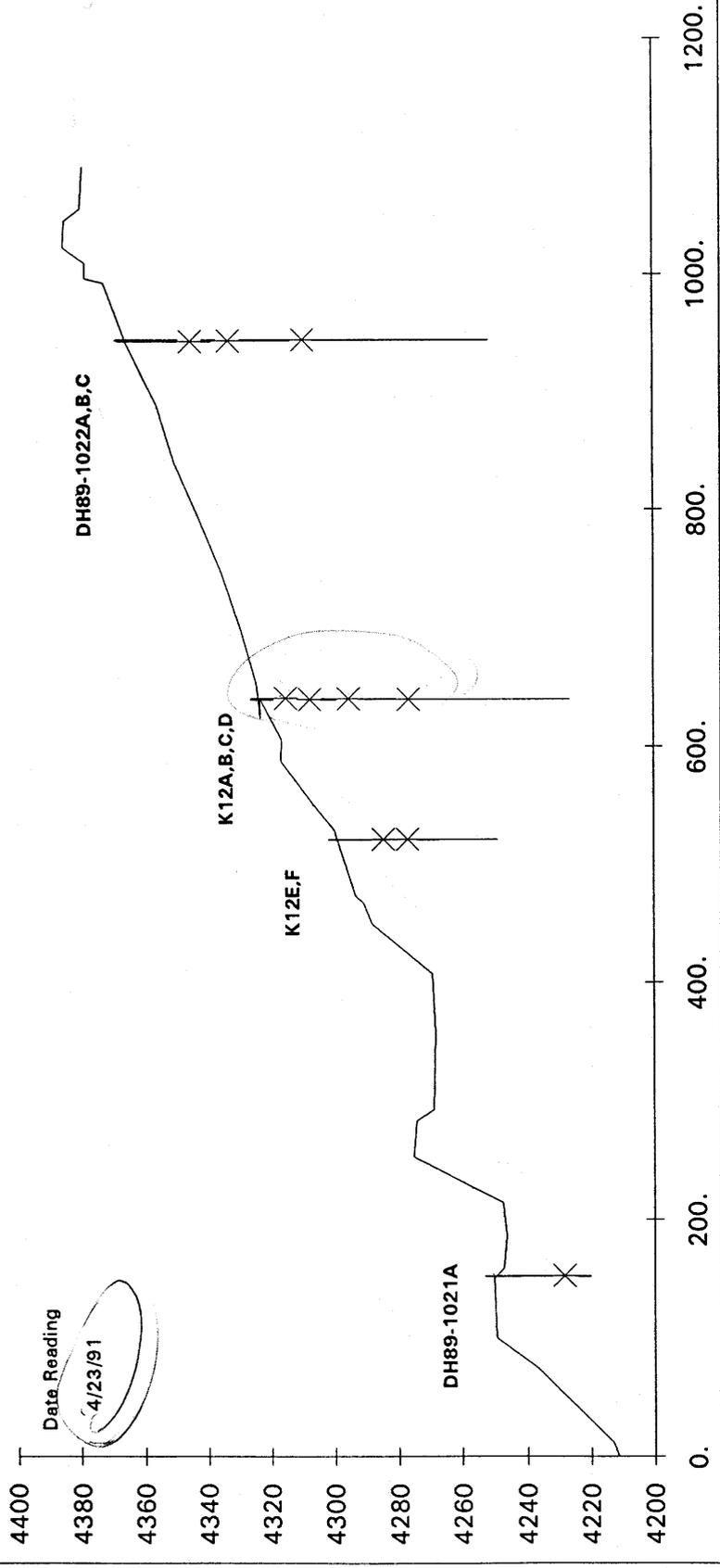
KUC - Section A



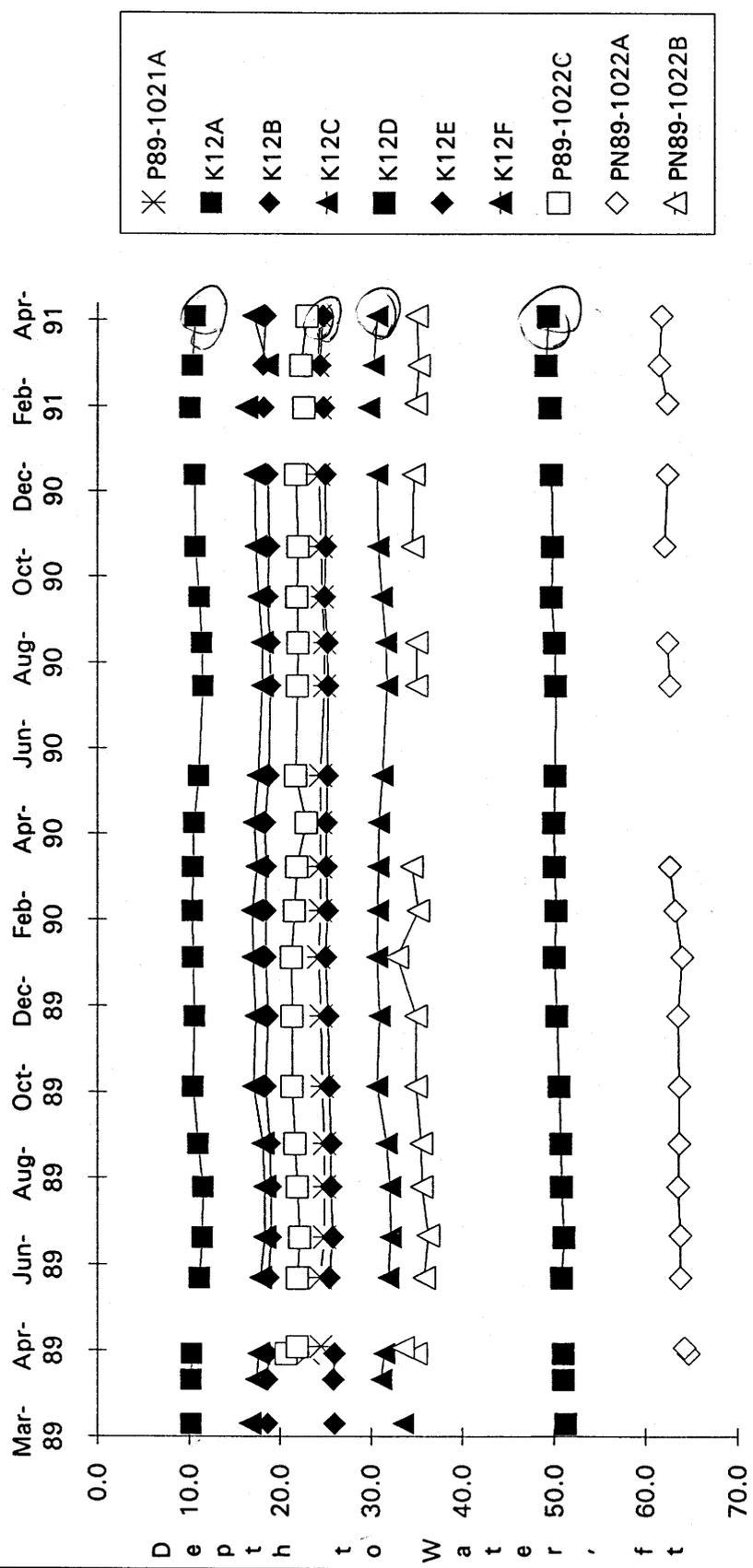
Section A - Piezometer Trends

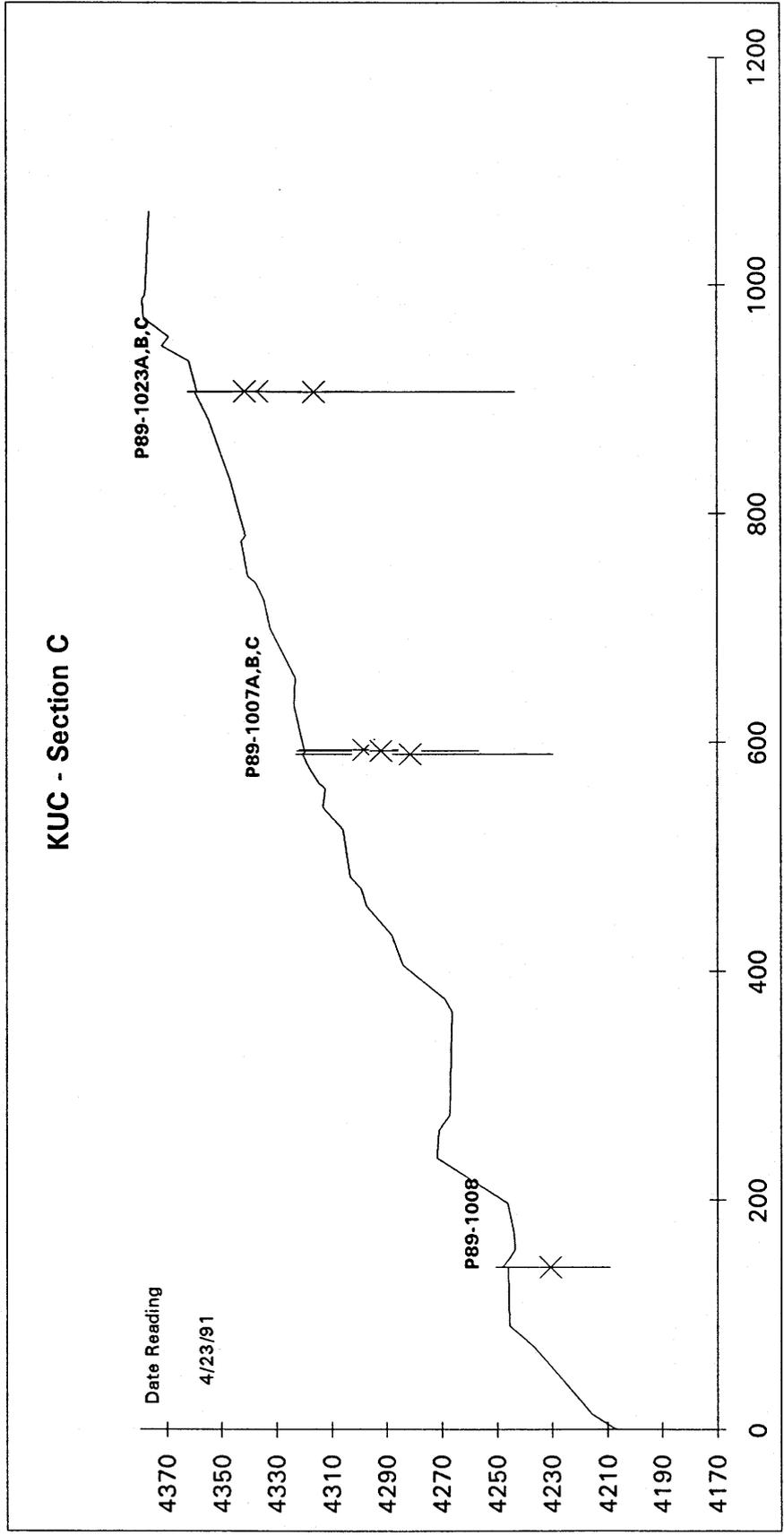


KUC - Section B

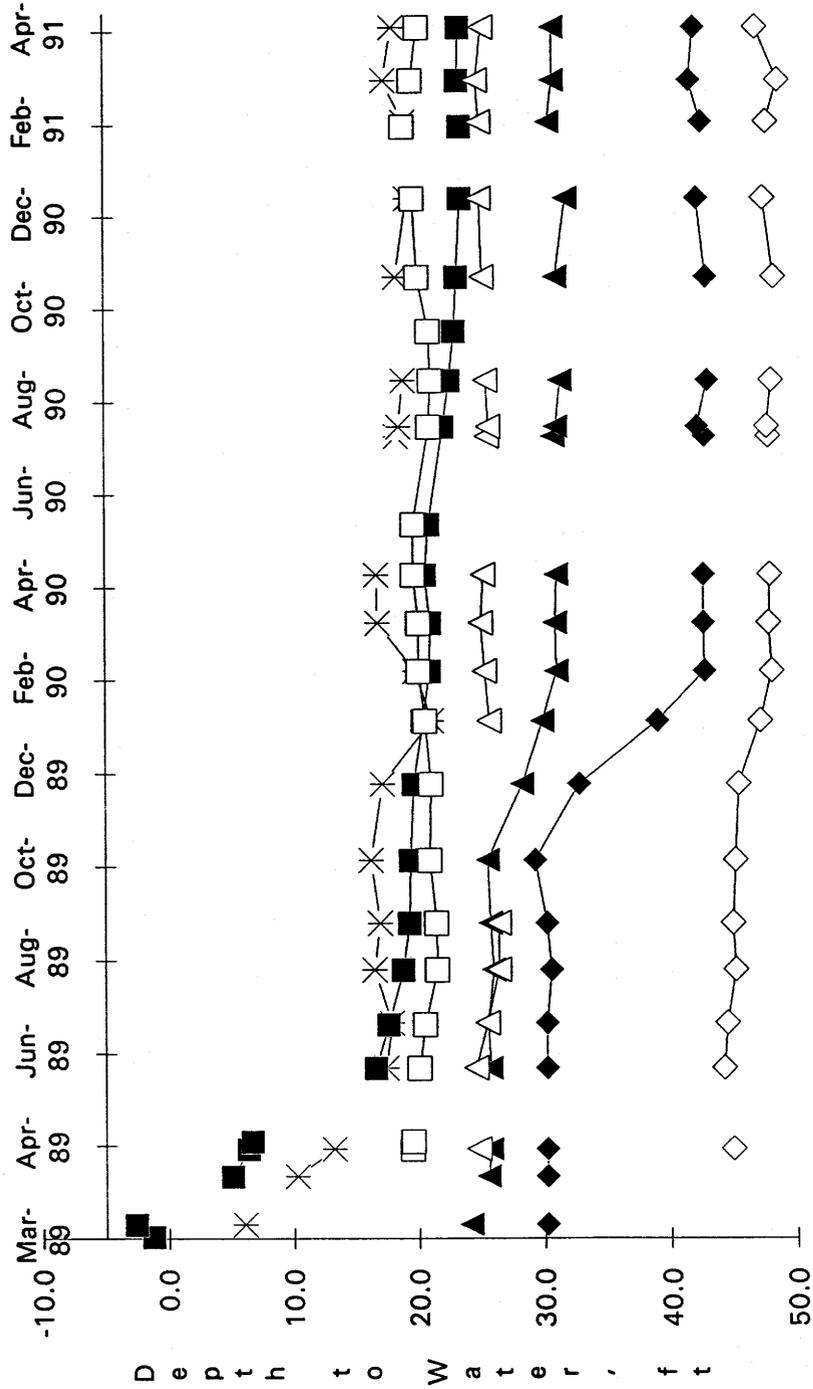


Section B - Piezometer Trends

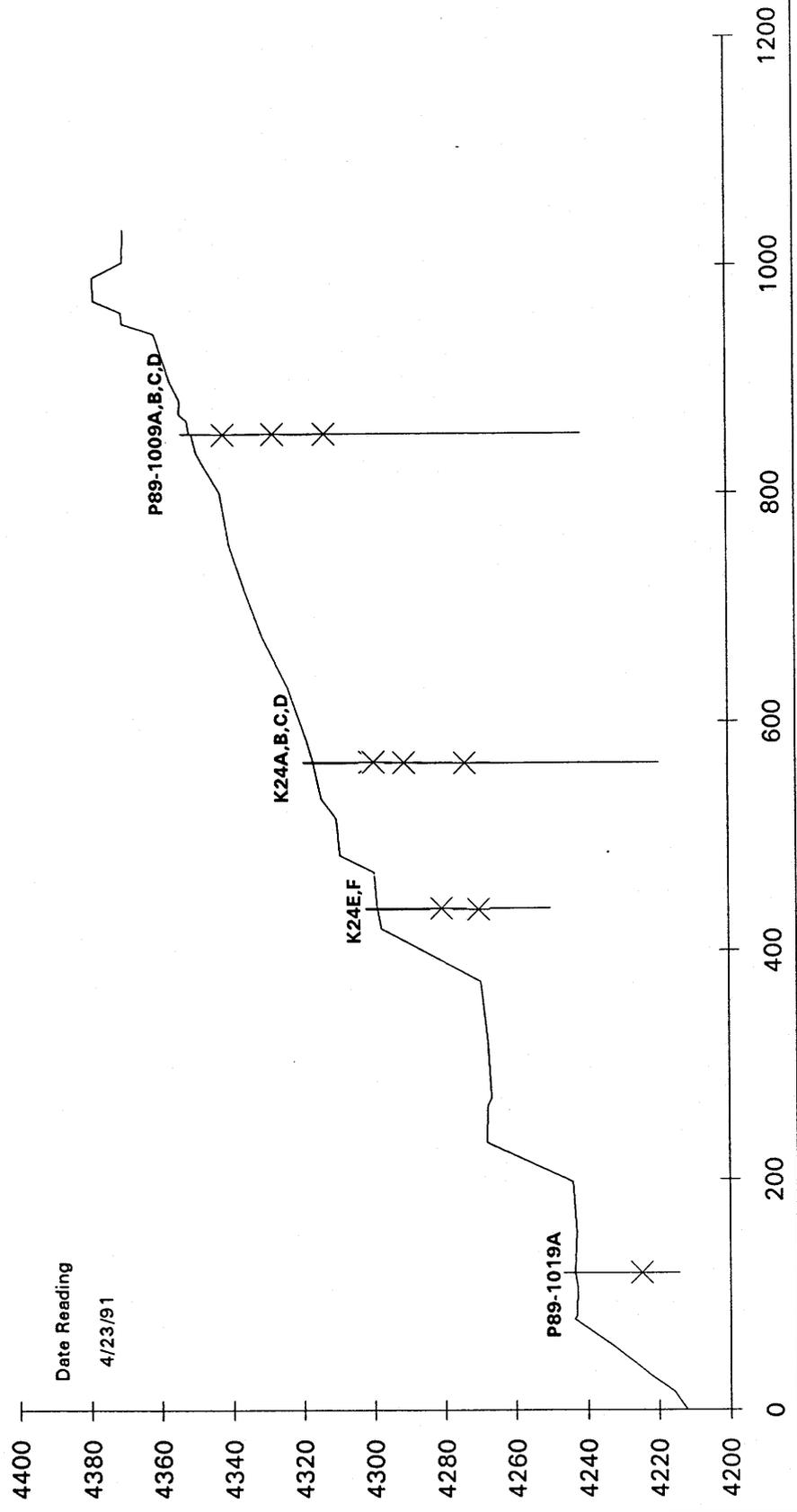




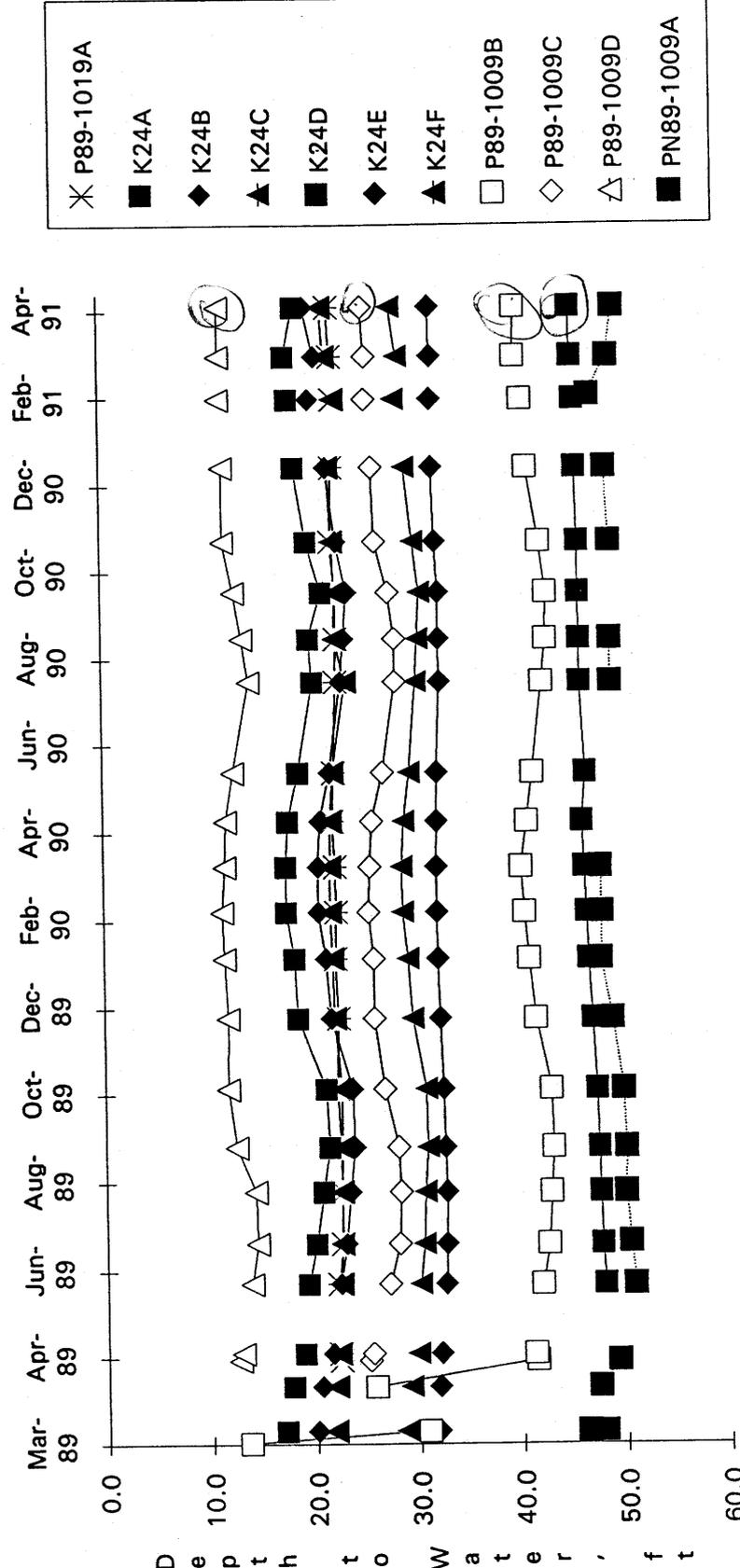
Section C - Piezometer Trends



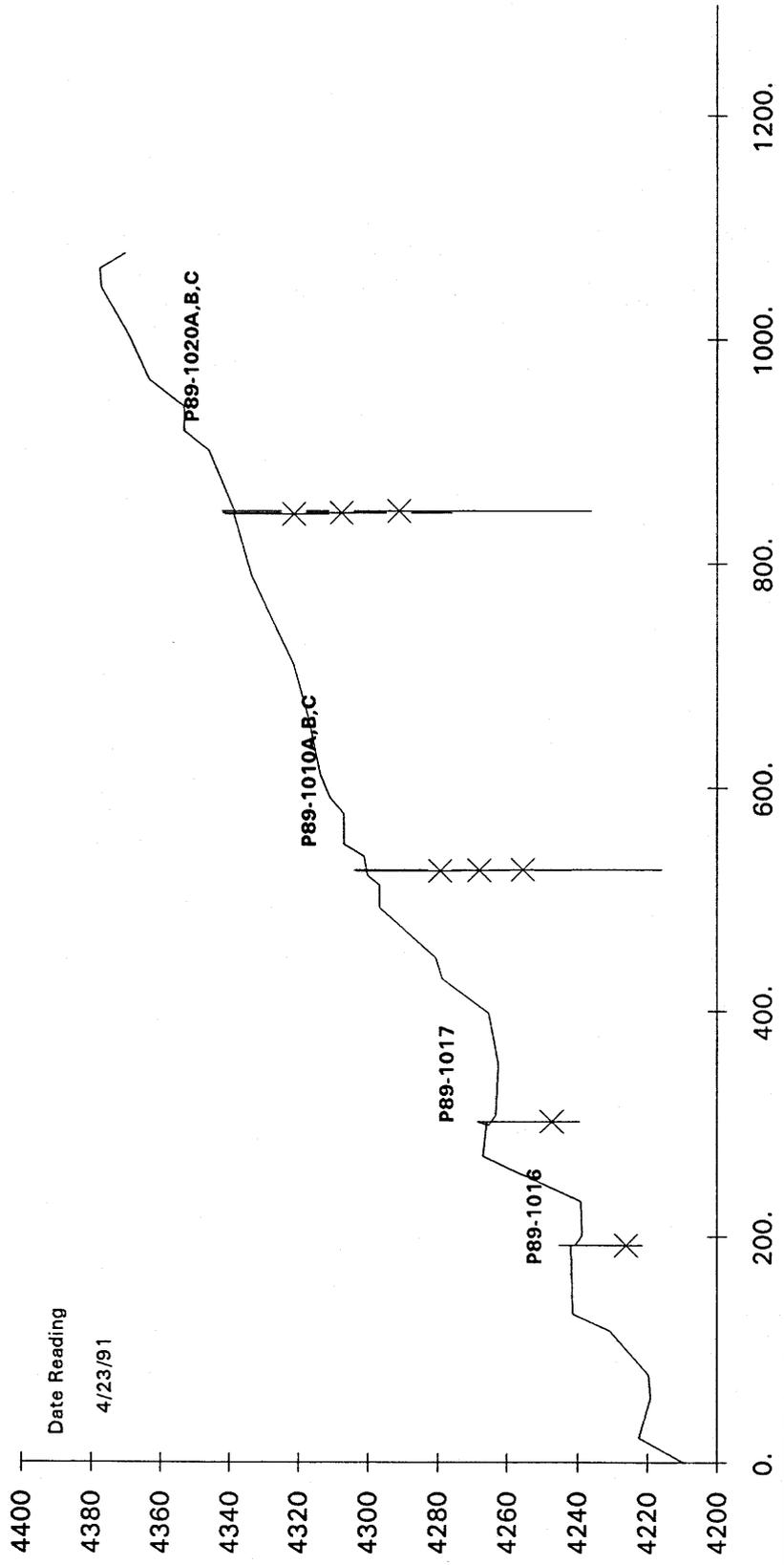
KUC - Section D



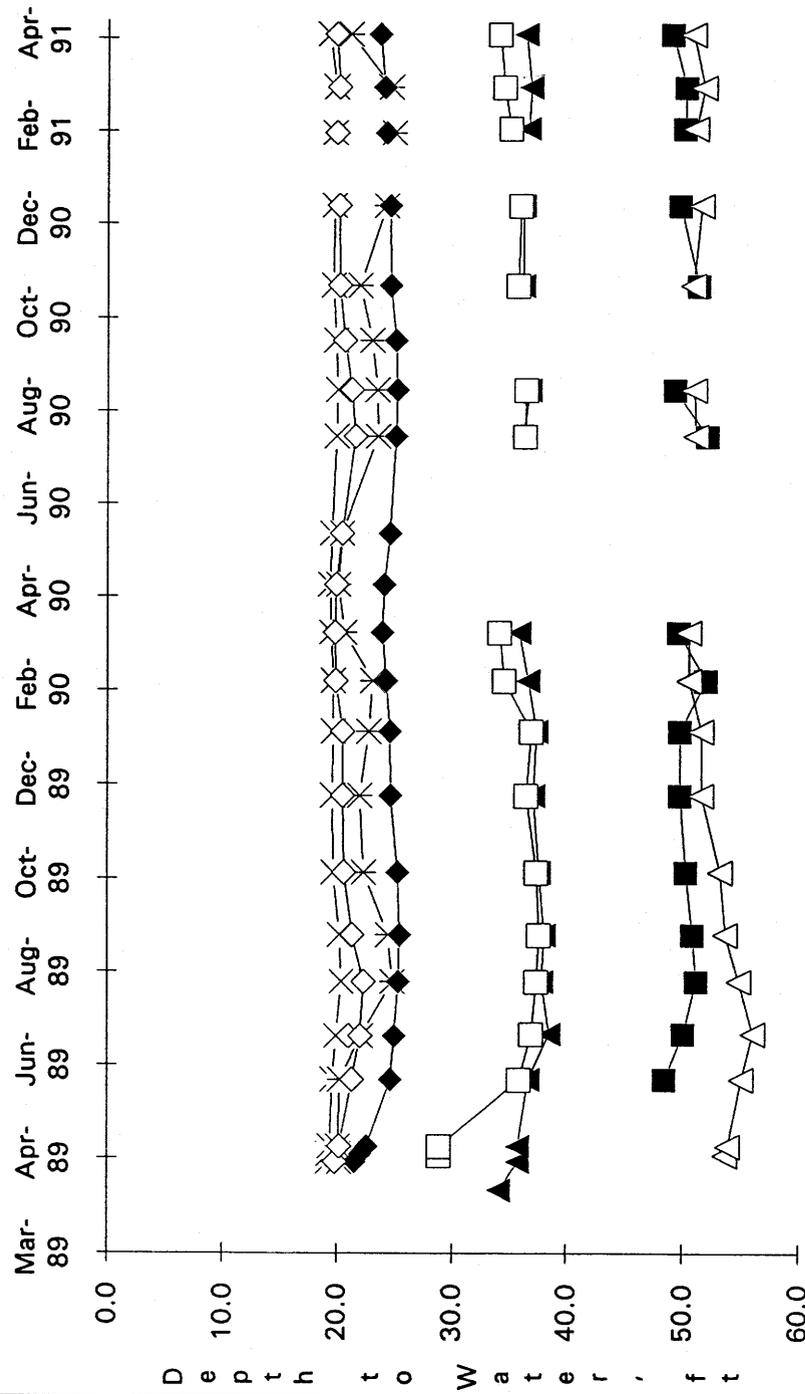
Section D - Piezometer Trends



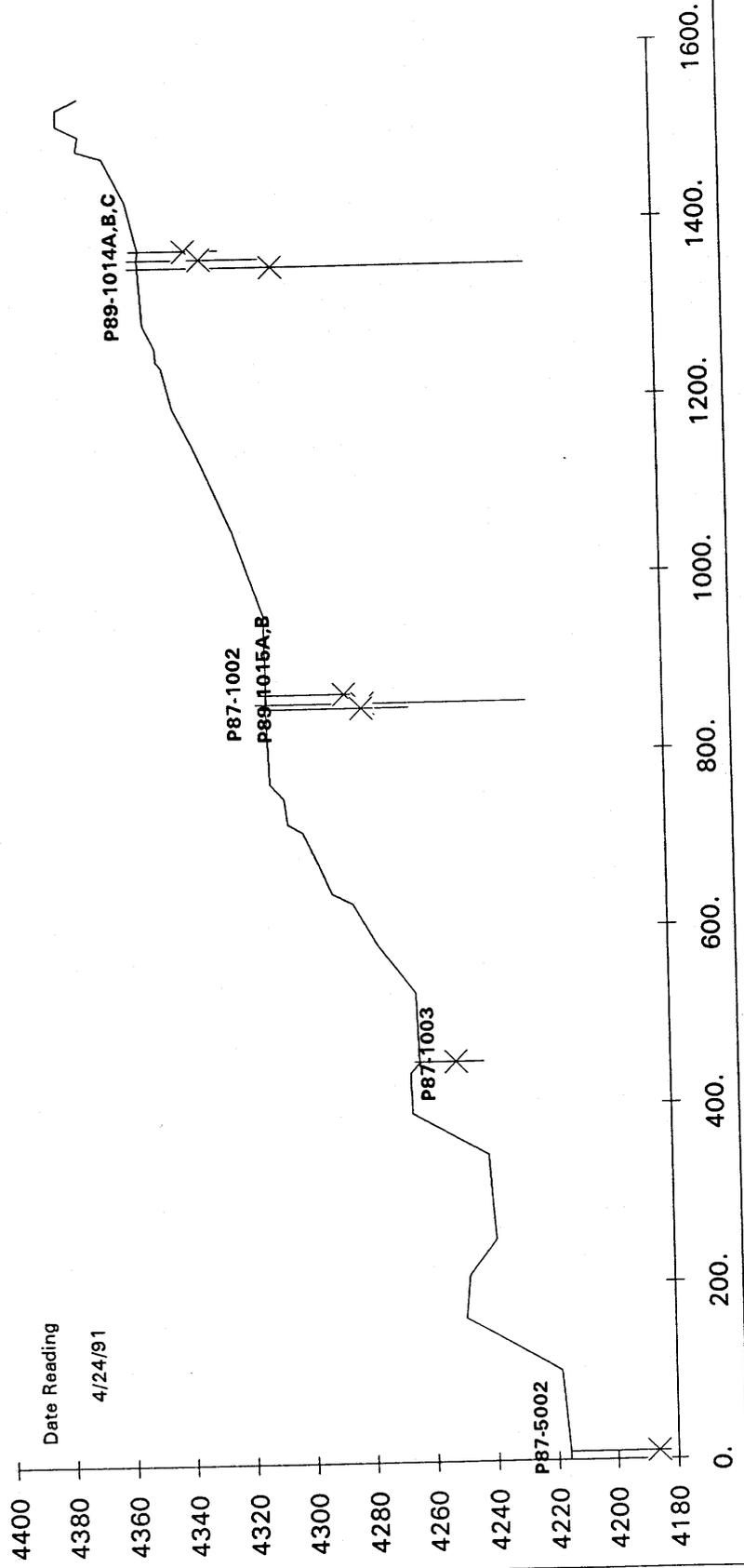
KUC - Section E



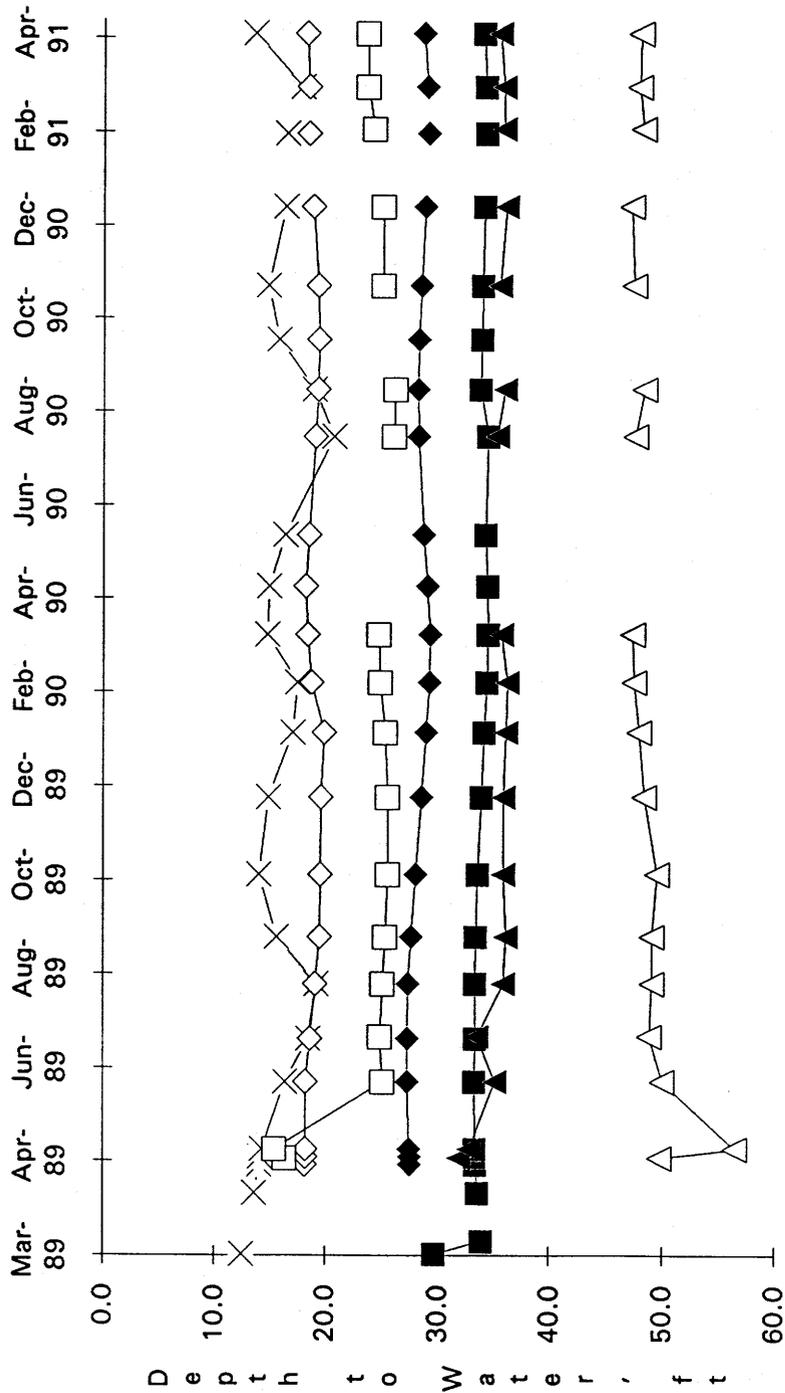
Section E - Piezometer Trends

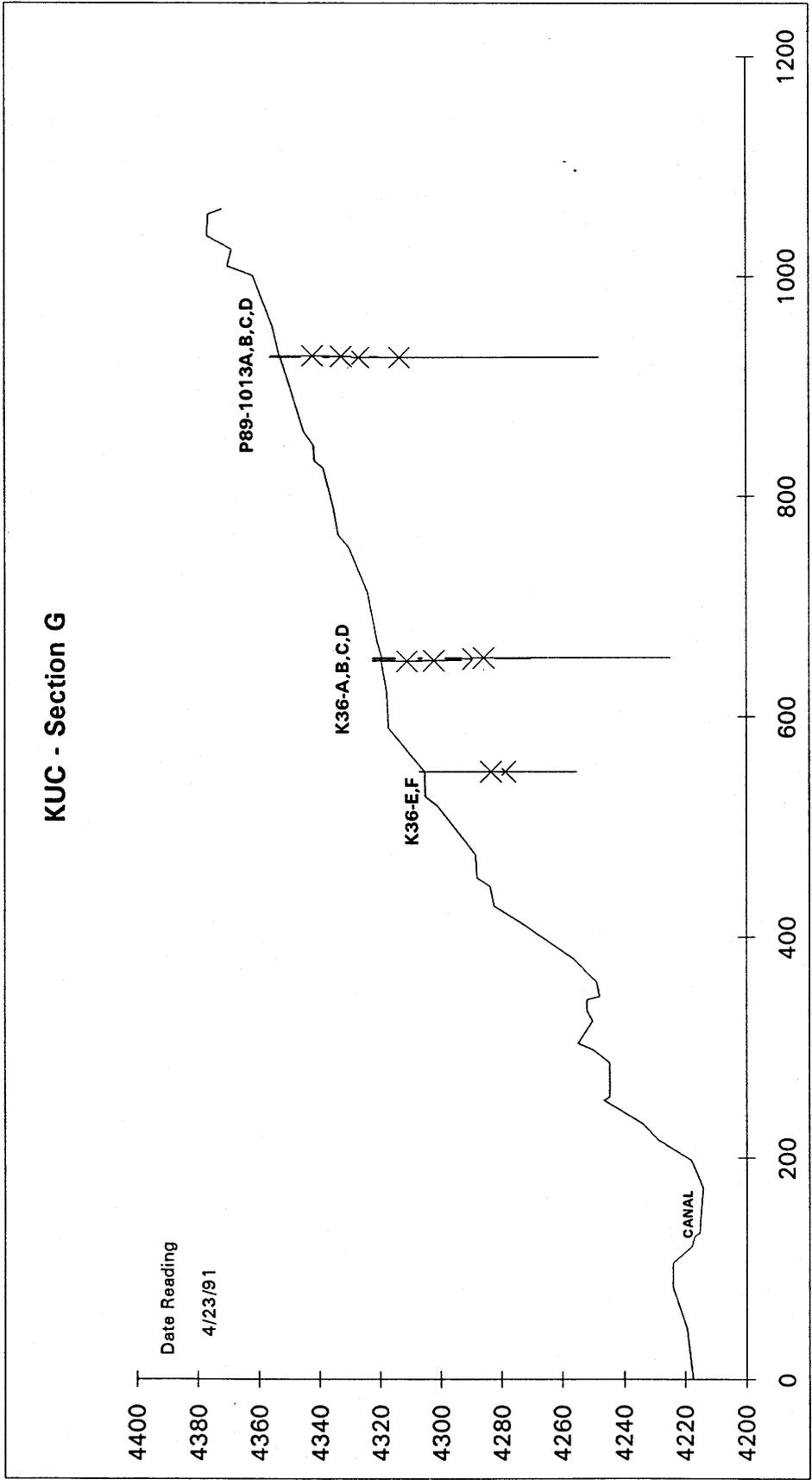


KUC - Section F (Siphon)

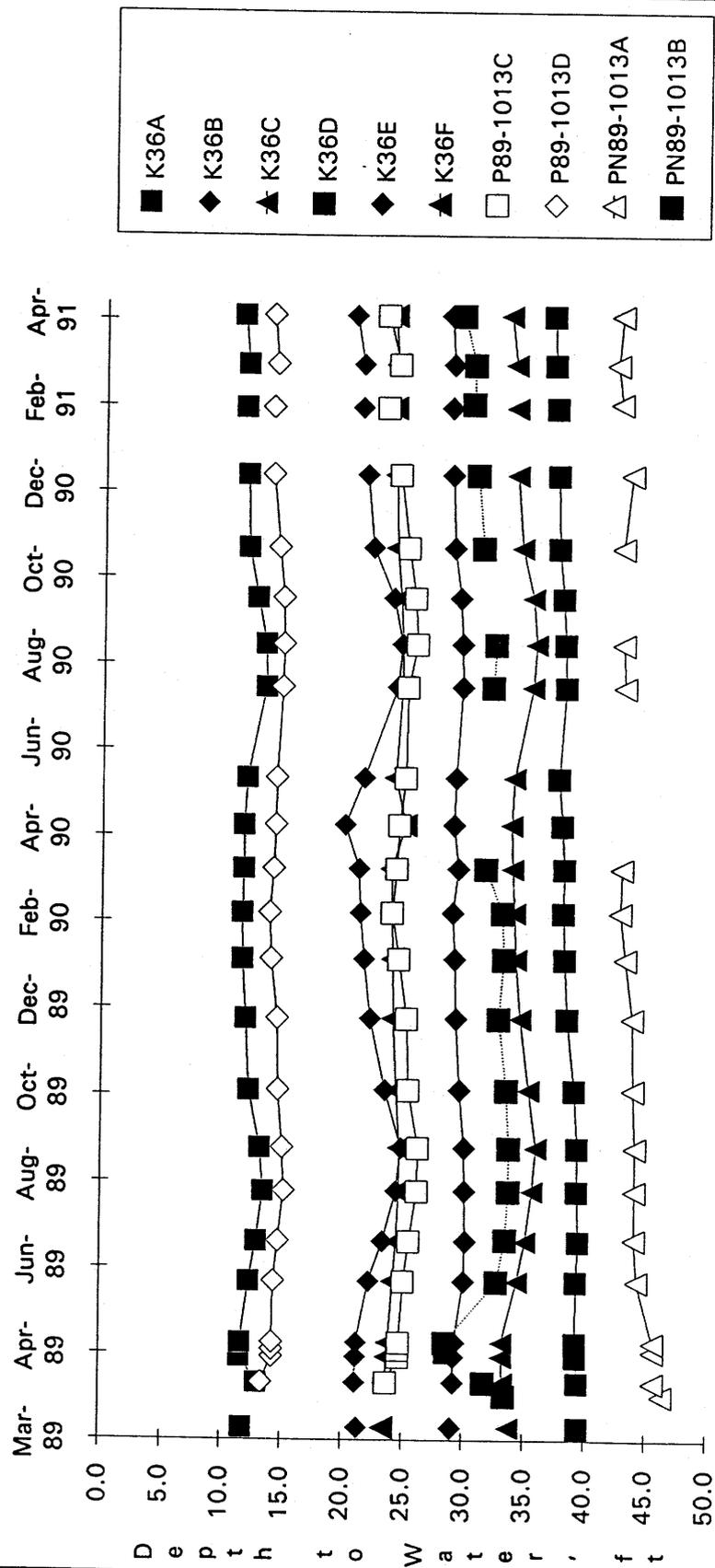


Section F - Piezometer Trends

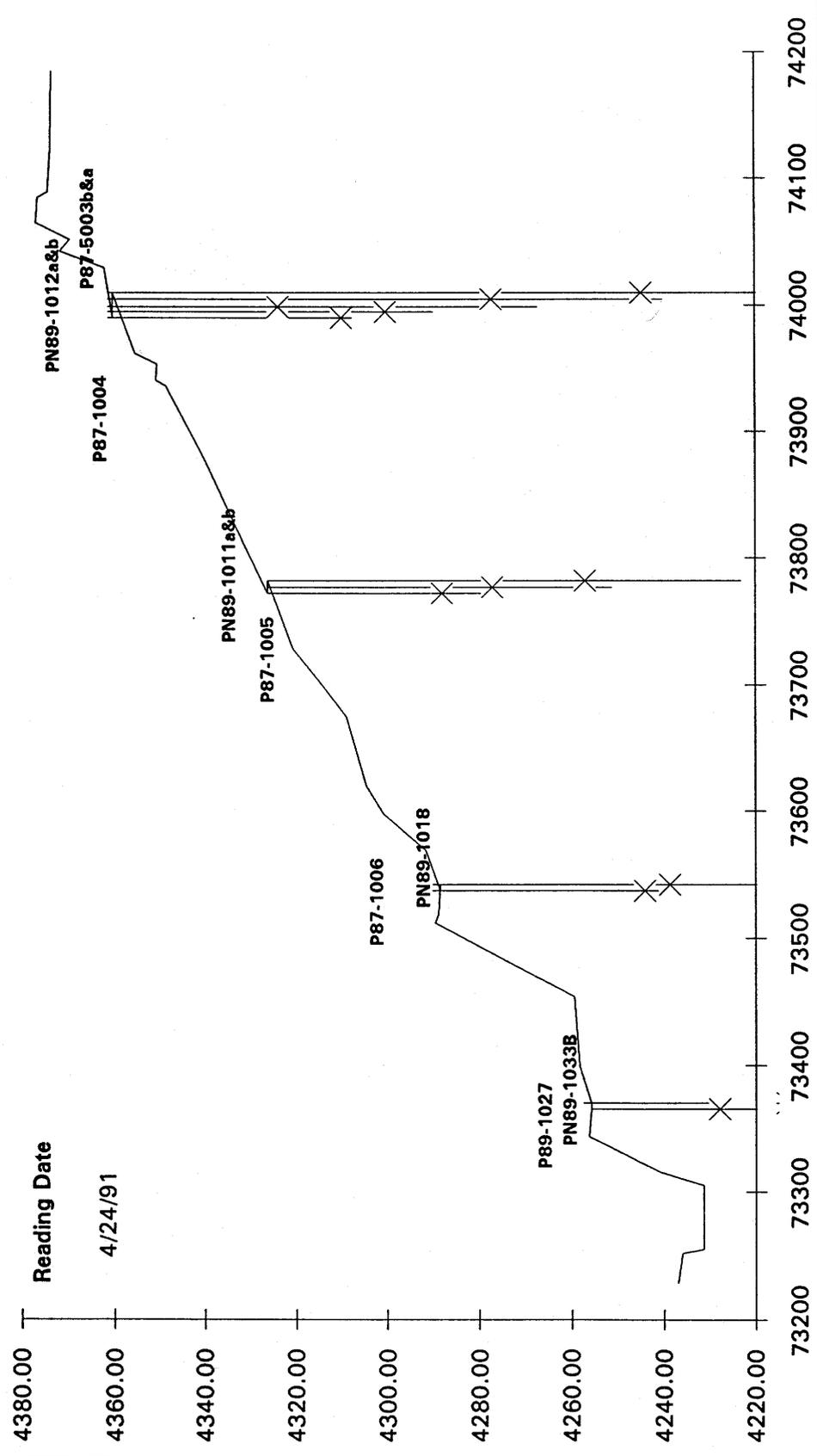




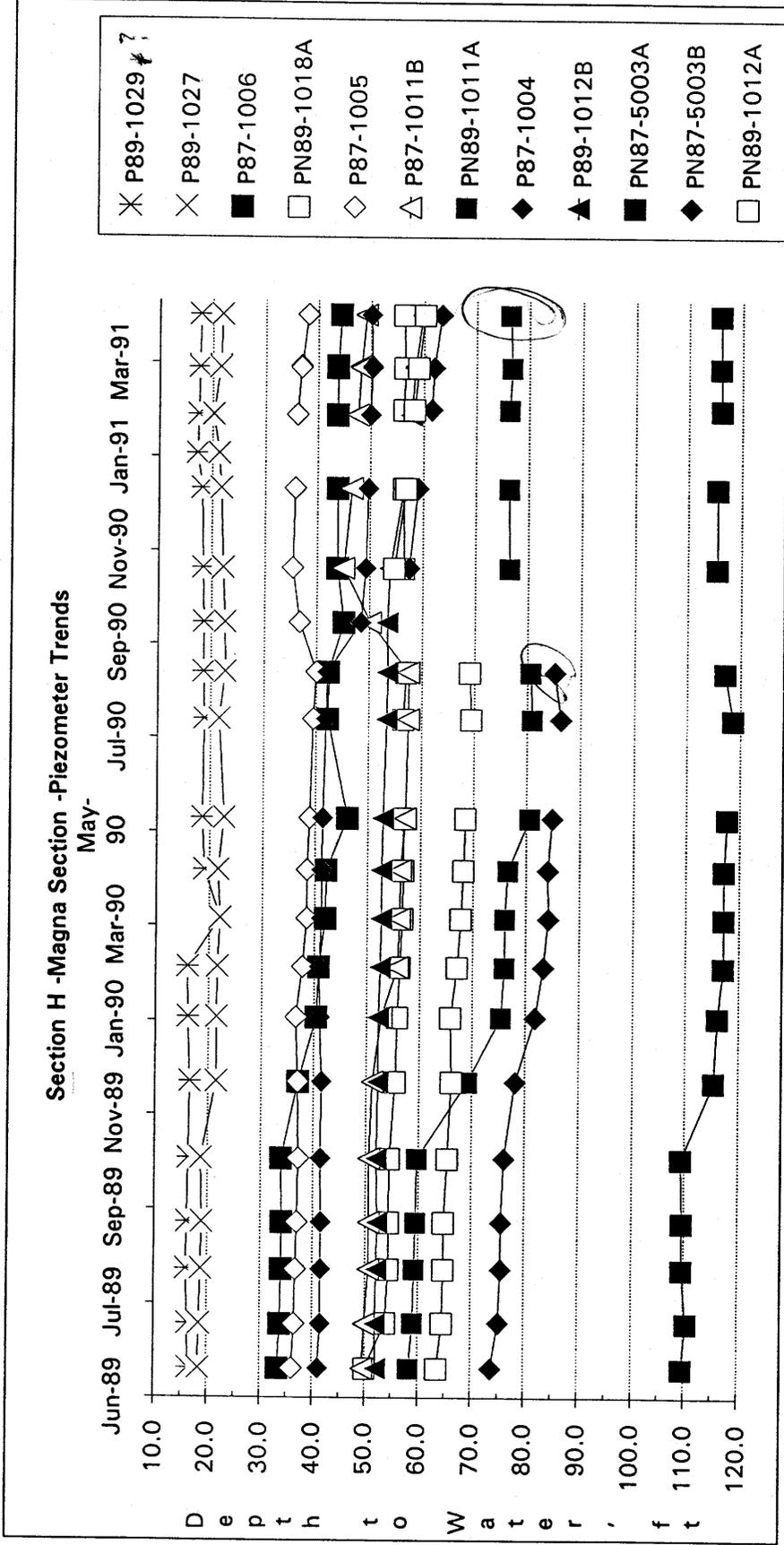
Section G - Piezometer Trends



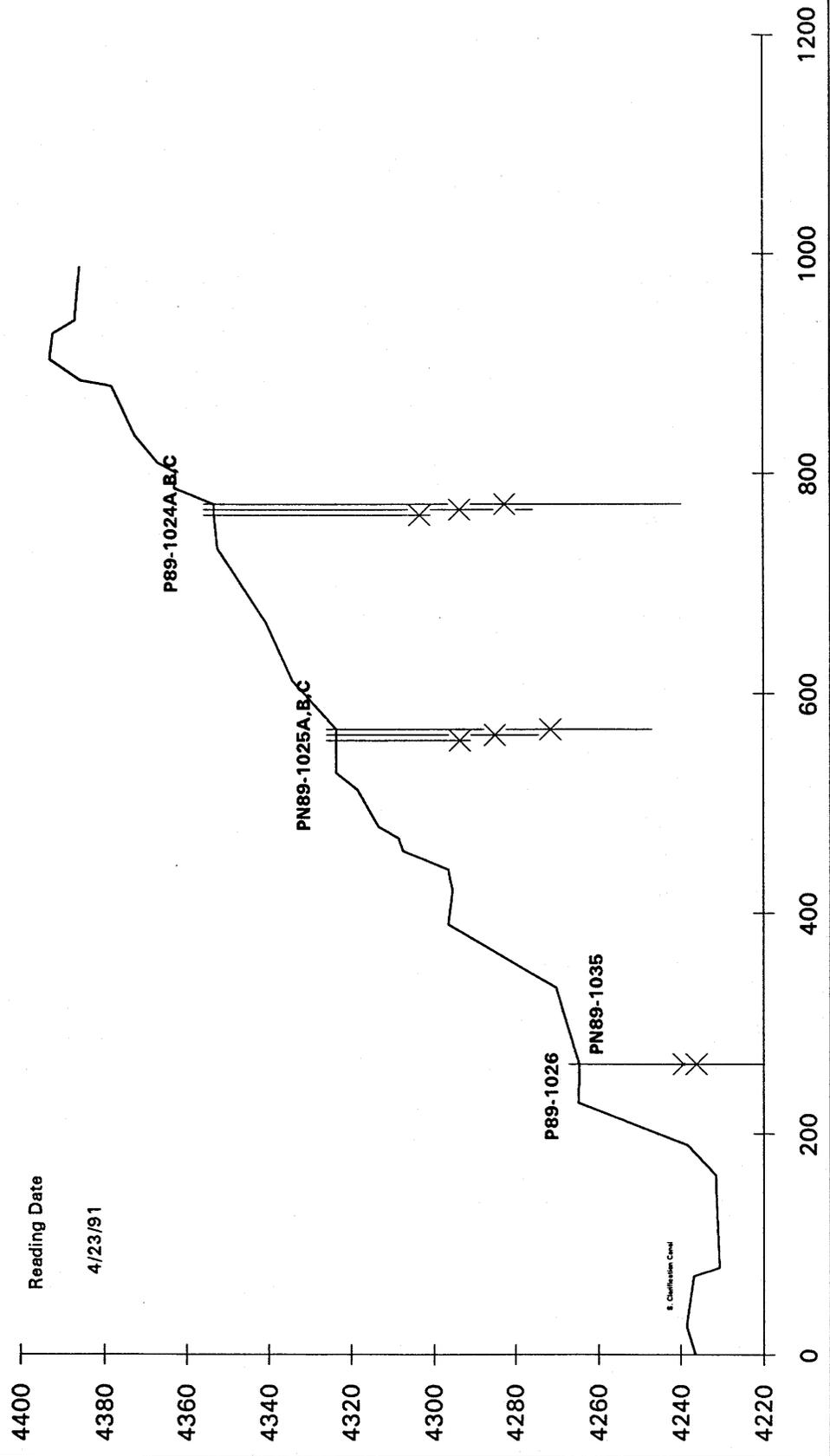
Section H - KL Magna Piezometer Section



April 2



SECTION I - (West 6000)



Section I - Piezometer Trends

